CLAIMS

1. A method for treating an allergic condition other than asthma in a subject, comprising:

administering to a subject having an allergic condition other than asthma an isolated polymer in an effective amount to treat the allergic condition, wherein the polymer comprises repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate, and sulfonate.

2. The method of claim 1, wherein the motif is a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of phosphate, phosphonate, sulfate, and sulfonate.

3. The method of claim 1, wherein the administering comprises delivering an aerosol of the polymer to an airway of the subject.

4. The method of claim 1, wherein the subject is free of symptoms otherwise calling for treatment with the polymer.

5. The method of claim 1, wherein the polymer is a polysaccharide.

6. The method of claim 1, wherein the polymer is a bacterial capsular polysaccharide.

7. The method of claim 1, wherein the polymer is PSA1.

8. The method of claim 1, wherein the polymer is PSA2.

9. The method of claim 1, wherein the polymer is PSB.

10. The method of claim 1, wherein the polymer is *Streptococcus pneumoniae* capsular polysaccharide 1 (CP1).

11. The method of claim 1, wherein the polymer is de-N-acetylated *Salmonella typhi* Vi antigen.

12. The method of claim 1, wherein the polymer is aminated pectin.

13. The method of claim 1, wherein the polymer is synthetic peptidoglycan Compound 15.

14. The method of claim 1, wherein the polymer is a peptide.

15. The method of claim 1, wherein the polymer is $(K\text{-}D)_n$, wherein n is an integer between 10 and 100, inclusive.

16. The method of claim 1, wherein the polymer is $[K\text{-}(Xaa)_m\text{-}D]_n$, wherein each Xaa is independently any neutral amino acid, m is an integer between 0 and 8, inclusive, and n is an integer between 1 and 100, inclusive.

17. The method of claim 1, wherein the method further comprises administering to the subject an anti-allergy medicament selected from the group consisting of glucocorticoids, antihistamines, and anti-IgE.

18. The method of claim 1, wherein the administering comprises administering to the subject having an allergic condition other than asthma multiple doses of the isolated polymer to treat the allergic condition.

19. A method for treating a subject having an allergic condition associated with an identified allergen, comprising

(a) exposing a subject having an allergic condition associated with an identified allergen to the allergen; and

(b) administering to the subject an isolated polymer in an effective amount to treat the allergic condition, wherein the polymer includes repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free

amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate.

20. The method of claim 19, wherein the exposing precedes the administering.

21. The method of claim 19, wherein the exposing follows the administering.

22. The method of claim 19, wherein the exposing and the administering are substantially contemporaneous.

23. A method for treating asthma in a subject, comprising:
administering to a subject having asthma an isolated polymer in an effective amount to treat the asthma, wherein the polymer comprises repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate, and sulfonate.

24. The method of claim 23, wherein the motif is a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of phosphate, phosphonate, sulfate and sulfonate.

25. The method of claim 23, wherein the polymer is a polymer other than CP1 or synthetic peptidoglycan Compound 15.

26. The method of claim 23, wherein the subject is free of symptoms otherwise calling for treatment with the polymer.

27. The method of claim 23, wherein the administering comprises delivering an aerosol of the polymer to an airway of the subject.

28. The method of claim 23, wherein the polymer is a polysaccharide.

29. The method of claim 23, wherein the polymer is a bacterial capsular polysaccharide.

30. The method of claim 23, wherein the polymer is aminated pectin.

31. The method of claim 23, wherein the polymer is synthetic peptidoglycan Compound 15.

32. The method of claim 23, wherein the polymer is a peptide.

33. The method of claim 23, wherein the polymer is $(K\text{-}D)_n$, wherein n is an integer between 10 and 100, inclusive.

34. The method of claim 23, wherein the polymer is $[K\text{-}(Xaa)_m\text{-}D]_n$, wherein each Xaa is independently any neutral amino acid, m is an integer between 0 and 8, inclusive, and n is an integer between 1 and 100, inclusive.

35. The method of claim 23, wherein the method further comprises administering to the subject an anti-asthma medicament selected from the group consisting of glucocorticoids, beta adrenergic agonists, methylxanthines, anticholinergics, cromolyn, nedocromil, antihistamines, and anti-IgE.

36. The method of claim 23, wherein the administering comprises administering to the subject having an allergic condition other than asthma multiple doses of the isolated polymer to treat the allergic condition.

37. A method for treating a subject having asthma associated with an identified allergen, comprising

(a) exposing a subject having asthma associated with an identified allergen to the allergen; and

(b) administering to the subject a polymer in an effective amount to treat the asthma, wherein the polymer includes repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a

negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate.

38. The method of claim 37, wherein the exposing precedes the administering.

39. The method of claim 37, wherein the exposing follows the administering.

40. The method of claim 37, wherein the exposing and the administering are substantially contemporaneous.

41. A method for inducing interleukin 10 (IL-10) production, comprising:

isolating a T regulatory cell; and

contacting the T regulatory cell with an effective amount of an isolated polymer to induce production of IL-10 by the T regulatory cell, wherein the polymer comprises repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of phosphate, phosphonate, sulfate, and sulfonate.

42. The method of claim 41, wherein the polymer is a polysaccharide.

43. The method of claim 41, wherein the polymer is a bacterial capsular polysaccharide.

44. The method of claim 41, wherein the polymer is aminated pectin.

45. The method of claim 41, wherein the polymer is synthetic peptidoglycan Compound 15.

46. A method for inducing expression of inducible costimulatory molecule (ICOS) on a CD4+ cell, comprising:

contacting a CD4+ cell with an effective amount of an isolated polymer to induce expression of ICOS on the CD4+ cell, wherein the polymer comprises repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively

charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate; and

measuring an increased ICOS expression on the CD4+ cell, wherein ICOS expression on the CD4+ cell is increased when ICOS expression after the contacting exceeds ICOS expression before the contacting.

47. The method of claim 46, wherein the motif is a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of phosphate, phosphonate, sulfate, and sulfonate.

48. The method of claim 46, wherein the polymer is a polysaccharide.

49. The method of claim 46, wherein the polymer is a bacterial capsular polysaccharide.

50. The method of claim 46, wherein the polymer is PSA1.

51. The method of claim 46, wherein the polymer is PSA2.

52. The method of claim 46, wherein the polymer is PSB.

53. The method of claim 46, wherein the polymer is *Streptococcus pneumoniae* capsular polysaccharide 1 (CP1).

54. The method of claim 46, wherein the polymer is de-N-acetylated *Salmonella typhi* Vi antigen.

55. The method of claim 46, wherein the polymer is aminated pectin.

56. The method of claim 46, wherein the polymer is synthetic peptidoglycan Compound 15.

57. A method for inducing proliferation of T regulatory cells, comprising

isolating a population of naïve T cells; and

contacting the population of naïve T cells with an effective amount of an isolated polymer to induce proliferation of T regulatory cells, wherein the polymer includes repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate.

58. The method of claim 57, further comprising contacting the population of naïve T cells with an antigen.

59. The method of claim 57, further comprising contacting the population of naïve T cells with exogenously supplied interleukin-2 (IL-2), interleukin-15 (IL-15), or a combination of IL-2 and IL-15.

60. A method for inducing proliferation of T regulatory cells, comprising:

isolating a population of T regulatory cells; and

contacting the population of T regulatory cells with an effective amount of an isolated polymer to induce proliferation of the T regulatory cells, wherein the polymer comprises repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate, and sulfonate.

61. The method of claim 60, wherein the polymer is a polysaccharide.

62. The method of claim 60, wherein the polymer is a bacterial capsular polysaccharide.

63. The method of claim 60, wherein the polymer is aminated pectin.

64. The method of claim 60, wherein the polymer is synthetic peptidoglycan Compound 15.

65. The method of claim 60, further comprising contacting the population of T regulatory cells with an antigen.

66. The method of claim 60, further comprising contacting the population of T regulatory cells with exogenously supplied interleukin-2 (IL-2), interleukin-15 (IL-15), or a combination of IL-2 and IL-15.

67. A method for inhibiting an antigen-specific immune response in a subject, wherein the antigen-specific response is other than an allergic condition or asthma, comprising administering to a subject in need of inhibition of an antigen-specific response, other than an allergic condition or asthma, (a) an antigen and (b) an isolated polymer in an effective amount to inhibit in the subject an immune response to the antigen, wherein the polymer includes repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate.

68. The method of claim 67, wherein the administering the antigen precedes the administering the polymer.

69. The method of claim 67, wherein the administering the antigen follows the administering the polymer.

70. The method of claim 67, wherein the administering the antigen and the administering the polymer are substantially contemporaneous.

71. The method of claim 67, wherein the administering the polymer comprises administering multiple doses of the polymer.

72. A composition comprising a conjugate comprising an antigen and a polymer, wherein the polymer includes repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a

negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate and sulfonate.

73. A pharmaceutical composition, comprising:

an aerosol formulation of a polymer of repeating units of a charge motif characteristic of *B. fragilis* polysaccharide A (PSA), the motif being a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of carboxyl, phosphate, phosphonate, sulfate, and sulfonate.

74. The composition of claim 73, wherein the polymer is a polysaccharide.

75. The composition of claim 73, wherein the polymer is a bacterial capsular polysaccharide.

76. The composition of claim 73, wherein the polymer is PSA1.

77. The composition of claim 73, wherein the polymer is PSA2.

78. The composition of claim 73, wherein the polymer is PSB.

79. The composition of claim 73, wherein the polymer is *Streptococcus pneumoniae* capsular polysaccharide 1 (CP1).

80. The composition of claim 73, wherein the polymer is de-N-acetylated *Salmonella typhi* Vi antigen.

81. The composition of claim 73, wherein the polymer is aminated pectin.

82. The composition of claim 73, wherein the polymer is synthetic peptidoglycan Compound 15.

83. The composition of claim 73, wherein the motif is a positively charged free amino moiety and a negatively charged moiety selected from the group consisting of phosphate, phosphonate, sulfate, and sulfonate.

84. The composition of claim 73, wherein the polymer is a peptide.

85. The composition of claim 73, wherein the polymer is $(K\text{-}D)_n$, wherein n is an integer between 10 and 100, inclusive.

86. The composition of claim 73, wherein the polymer is $[K\text{-}(Xaa)_m\text{-}D]_n$, wherein each Xaa is independently any neutral amino acid, m is an integer between 0 and 8, inclusive, and n is an integer between 1 and 100, inclusive.

87. The composition of claim 73, wherein the composition comprises a therapeutically effective amount of the aerosol formulation for treatment of an allergic condition.

88. The composition of claim 73, wherein the composition comprises a therapeutically effective amount of the aerosol formulation for treatment of allergic asthma.

89. The composition of claim 73, further comprising another agent useful in the treatment of an allergic condition.

90. The composition of claim 89, wherein the other agent is an anti-allergy medicament selected from the group consisting of glucocorticoids, antihistamines, and anti-IgE.

91. The composition of claim 73, further comprising another agent useful in the treatment of asthma.

92. The composition of claim 91, wherein the other agent is an anti-asthma medicament selected from the group consisting of glucocorticoids, beta adrenergic agonists, methylxanthines, anticholinergics, cromolyn, nedocromil, antihistamines, IL-10, and anti-IgE.

93. An aerosol delivery system comprising a container with an interior, an aerosol generator in fluid connection with the interior of the container, and a pharmaceutical composition of claim 73 disposed within the interior of the container.

94. The aerosol delivery system of claim 93, wherein the aerosol delivery system is a metered dose inhaler for delivery of the polymer.

95. The aerosol delivery system of claim 93, wherein the aerosol delivery system is a dry powder inhaler for delivery of the polymer.

96. The aerosol delivery system of claim 93, wherein the aerosol delivery system is a nebulizer for delivery of the polymer.

97. The aerosol delivery system of claim 93, wherein the aerosol delivery system is a spray dispenser for topical delivery of the polymer to an epithelium.